

## FIELD OF THE INVENTION

The present invention relates to a document binder having document fastener which its length varies during use according to the opening angle of the binder's side covers, allowing for a convenient browsing and for fast and easy filing and removing documents.

## BACKGROUND OF THE INVENTION

The need for reliable binding methods is ever present and growing in the modern world, where almost every human being is faced with the need to file all kinds of documents for future reference. There are several known methods for document filing in binders. One known method for document binding is to bind the documents permanently, in the form of a book, using an adhesive strip which is glued to the side of a bunch of paper sheets, thus holding these papers together. This method is good for papers of substantially equal dimensions, and is useless if a certain document needs separation from the entire bunch. For convenient separation of documents another method of binding is used. Each sheet of paper is perforated at the same relative location on the sheet, and is threaded on a peg, which is attached to a folder, thus holding said sheet of paper in place. Commonly documents destined to be filed in binders are perforated in at least two (usually exactly two) locations, near one of the elongated edges of the paper.

Several types of such pegs are known. One type of such a peg is a foldable peg which when erect allows for the filing or removing of documents, and when folded sideways prevents the release of the bound documents. Optionally an additional bar is placed onto the folded peg to obstruct erecting it unintentionally. Using this binding method insures relatively secure binding, but is extremely inconvenient when a certain document needs to be released and taken out of the binder.

There is the semi-circular peg, which can be drawn to an adjacent semicircular such peg, forming a ring, thus preventing the release of the filed documents, in one position. To take up its other position the semi-circular peg can be drawn away from the adjacent peg, thus opening the ring and allowing for the removal of filed documents or filing of additional documents. Generally the semi-circular peg is held in its open or closed position by means of a spring. A major drawback of the semicircular peg binding is the tendency of the peg to give way and become slack in

its closed position, thus allowing slipping of sheets out of the ring, and their subsequent detachment from the binder.

It is the object of the present invention to provide a novel document binding mechanism, which provides reliable and secure binding, and at the same time allows quick and easy removal or separation of required documents from the binder.

Yet another object of the present invention is to provide a document binding mechanism that allows for relatively large number of documents to be securely filed.

#### **BRIEF DESCRIPTION OF THE INVENTION**

The present invention relates to a document binder comprising two side covers, pivotally attached to opposing edges of a back cover, wherein on the internal face of each side cover at least one rigid peg is pivotally attached, and each peg is located in a corresponding position for an inter engagement with a mate peg of the opposite side cover, such that the total length of each pair of inter engaged pegs is varying during use according to the opening angle of the side covers.

#### **BRIEF DESCRIPTION OF THE FIGURES**

**Fig. 1** Illustrates the 'engaged' position of a preferred embodiment of the mechanism for a document binder of the present invention, where the binder is partially opened on both side covers.

**Fig. 2** Illustrates the 'engaged' position of said preferred embodiment of the mechanism for a document binder of the present invention, where the binder is partially opened on one side cover and fully opened on the other side cover.

**Fig. 3** Illustrates the 'engaged' position of said preferred embodiment of the mechanism for a document binder of the present invention, where the binder is closed on both side covers.

**Fig. 4** Illustrates the 'engaged' position of said preferred embodiment of the mechanism for a document binder of the present invention, where the binder is partially opened on one side cover and closed on the other side cover.

**Fig. 5** Illustrates the 'disengaged' position of a preferred embodiment of the mechanism for a document binder of the present invention, where the binder is fully opened on both side covers, allowing the disengagement of the pegs for removal or insertion of documents.

**Fig. 6** Illustrates a top view of the 'disengaged' position of said preferred embodiment of the mechanism for a document binder of the present invention, where the binder is fully opened on both side covers, allowing the disengagement of the pegs and removal or insertion of documents.

**Fig. 7** Illustrates the disengaged position with the pegs in a vertical orientation (open position), allowing filing or removal of documents.

**Fig. 8** Illustrates a disengaged position of another variation of the document binder according to the present invention. According to this variation, the side covers has to be drawn apart in angles of more than 180 degrees for reaching the "disengaged" position.

**Fig. 9** Illustrates a mechanism for providing steady definite positions to the pegs, with a disengaged peg lying steadily due to the appropriate relative position between protrusions and a leaf-spring of the mechanism.

**Fig. 10** Illustrates the leaf-spring and protrusions of the same mechanism of figure 9, with the peg in a vertical orientation (open position).

## DETAILED DESCRIPTION OF THE INVENTION AND FIGURES

The mechanism for a document binder of the present invention seeks to provide a simple and convenient filing and removing of documents in and out of a document folder.

**Fig. 1** illustrates the 'engaged' position of a preferred embodiment of the mechanism for a document binder of the present invention, where the binder is partially opened on both side covers.

The binder consists of a folder (1) having two opposing side covers (2), which are pivotally attached to a common rigid rectangular back cover (3), at opposing edges. A pair of rigid pegs (4, 5) is employed, each peg being attached pivotally to a side cover at a corresponding position opposite the peg of the other side cover. According to the present embodiment, the pivoting ability is achieved by connection the peg to the cover through clasps (6). The total length of both pegs is greater than the back cover (3) width across its surface. This is imperative in order to enable engagement of these pegs by insertion of one peg inside the other. In this embodiment one peg (4) of the pair is hollow along its stem allowing the other peg (5)

to be telescopically inserted inside the hollow cavity of the first peg. The insertion of one peg into the other can take place when the opposing side covers (2a) of the folder are drawn closer. The bound documents are threaded onto said pegs. In comparison with pegs of known document binders, the stem of the pegs according to the present invention is curved in a relatively flat arc. In addition, in an open position of the binder the pegs are extended telescopically up to twice of their length of close position (in known binders the length of the pegs is fixed). Due to the flat arc and the space obtained between documents in the extended position of the pegs, the documents can be turned conveniently, similarly to turning pages of book. It should be noted, however, that other methods of engagement between the pegs could be employed. For instance, one peg can be designed to have an external groove into which the other peg can fit and slide along. In the context of the present invention a pair of pegs which are adapted for sliding along each other are called also "mate pegs"; a single peg from mate pegs is called also "mate peg".

Figures 2 - 4 illustrate various relative peg positions respectful of the side covers position, all while maintaining the "engaged" position.

Reference is now made to Fig. 5 illustrates the 'disengaged' position of a preferred embodiment of the mechanism for a document binder of the present invention, where the binder is fully opened on both side covers, allowing the disengagement of the pegs and removal or insertion of documents.

The pegs can be disengaged when the side covers (2) are fully drawn apart, when the inserted peg is pulled out of the other peg. After the pegs are disengaged, the pegs of each side can be separately pivot to a vertical position, allowing a convenient removal or filing of documents. Preferably, the pivoting mechanism of pegs includes a spring (preferably a leaf spring). The leaf spring (7) is connected and located between two slits (8) in a metal plate (9), and this metal plate is attached to the side cover of the binder. The leaf spring (7) enables a pressed passage of an excentral protrusion (10) from the axis (11) around which pivots the peg within the clasp (6). The pivot axis (11) is adjacent to the leaf spring (7), and the protrusions (10) (12) (13) are arranged such that the leaf spring resists the movement of the axis between an "open" position (when the peg is oriented substantially vertically to its attached side cover) and a "disengagement" position (when the facing pegs are just disengaged, but still lying parallel to the back cover). The protrusions (12) (13) form both sides of the protrusion (10), prevent the peg from deviation into unwanted positions. (The same effect may

achieved alternatively with a leaf spring which passes from above the axis (11), or in other ways as well). Thus, by means of the mutual relations between the leaf spring and the protrusions (10) (12) (13), the momentary "open" and "disengagement" positions of the disengaged pegs are kept steadily.

In this position documents can be filed inside the binder, or removed from it conveniently. Fig. 6 illustrates a top view of the 'disengaged' position of said preferred embodiment of the mechanism for a document binder of the present invention, where the binder is fully opened on both side covers, allowing the disengagement of the pegs and removal or insertion of documents. In this embodiment two pairs of pegs are used, and this arrangement suits punched documents with a pair of matching holes.

Preferably at least two pairs of pegs are employed in the mechanism for a document binder of the present invention, in order to provide firm grip of the documents and avoid movements of these documents inside the binder. However more than two pairs of pegs can also be used. It should be noted that the number of peg pairs ought to match the number of perforations in the documents to be filed.

Standard perforation of documents using office punch produces circular holes 5 mm in diameter, and therefore it is recommended that the pegs have a circular cross section, as illustrated in Fig. 3. The hollow peg's outside diameter ought to be smaller than 5 mm, whereas the other peg's outside diameter should be smaller than the inside diameter of the hollow peg.

The disclosed mechanism of the present invention is also applicable in a binder with detachable side-covers, which are secured to the back cover with screws or other means.

The binder mechanism of the present invention allows smaller binder dimensions than the prior art binders.

It should be clear that the description of the embodiments and attached Figures set forth in this specification serves only for a better understanding of the invention, without limiting its scope as covered by the following Claims.

It should also be clear that a person in the art, after reading the present specification could make adjustments or amendments to the attached Figures and above described embodiments that would still be covered by the following Claims.